

Remarks

In the Office Action, the claims were restricted to one of two groups: Group I includes claims 1-18 and 44 and Group II includes 19-43. Claim 43 was rejected under 35 U.S.C. § 112. In addition, claims 19-43 were provisionally rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of copending U.S. Application No. 10/461,307. Further, claims 19, 24, and 25-43 were rejected under 35 U.S.C. § 102(e). Claims 20-23 were rejected under 35 U.S.C. § 103(a).

In the instant Amendment and Response, claims 1-18, 22-23, and 44 have been cancelled, claims 19 and 43 have been amended, and new claim 45 has been added.

Restriction/Election

In the Office Action, it was indicated that restriction was required. The Examiner identified two invention groups:

Group I (claims 1-18, 44) drawn to a device for characterization of polymers; and

Group II (claims 19-43) drawn to a method of making a membrane structure.

In response to the restriction requirement, Applicant elects the invention of Group II (claims 19-43) without traverse. Non-elected claims 1-18 and 44 are hereby cancelled without prejudice to applicant's right to assert these claims at a later date. Accordingly, claims 19-43 are now pending in the present application.

§ 112, ¶ 2 Rejection

Claim 43 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, it is asserted in the Office Action that since claim 43 does not set forth any steps involved in the information gathering method/process, it is unclear what method/process is intended to be encompassed. Applicants respectfully disagree.

Claim 43, as amended, is directed to molecular information gathered using the method of claim 45, which is directed to gathering molecular information from the measuring step of claim 19. Thus, claim 43 particularly points out and distinctly claims the subject matter which applicant regards as the invention. Reconsideration and withdrawal of the rejection is respectfully requested.

Double Patenting Rejections

Claims 19-43 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of copending U.S. Application No. 10/461,307 (“’307 Application”).

While Applicants disagree that the currently pending claims are obvious over those of the ’307 Application, in order to expedite allowance of the application, Applicants will consider a terminal disclaimer if necessary and appropriate when there is an indication of otherwise allowable subject matter.

§ 102(e) Rejections

Claims 19, 24, 25-43 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,627,067 (“Branton”). Applicants respectfully disagree.

Claim 19 Is Not Anticipated by Branton

Claim 19, as amended, is directed to a method of forming a membrane structure for use in a device to characterize polymer molecules. The method comprises, in part, “drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are performed during a single presentation to an instrument.”

In contrast, Branton does not disclose the invention of claim 19. Instead, Branton teaches microfabrication of an aperture in a solid-state membrane that requires more than a single presentation to an instrument. That is, Branton teaches an aperture-forming process that requires two steps with two presentations to different instruments.

First, a cavity is etched in the coating layer 134 as shown in Fig. 4G. *See* Branton, col. 13, ll. 3-5. This cavity-forming step is performed with a lithographic instrument. *Id.* at col. 13, ll. 5-18. Second, after the cavity has been lithographically etched in the membrane, the layer 134 is “thinned” until an aperture is formed. *Id.* at col. 13, l. 56 – col. 14, l. 13. This thinning step can be performed by a “wide range of thinning processes” other than lithography. *Id.* at col. 13, l. 66. As stated in Branton, “the aperture formation process relies on structural thinning, rather than lithography, to define the final aperture geometry.” *Id.* at col. 13, ll. 38-40. Thus, this second step requires a second presentation to a second instrument. Thus, Branton teaches an aperture-forming process that requires two steps with two presentations to different instruments. As such, Branton fails to teach or suggest drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are

performed during a single presentation to an instrument. Thus, Branton fails to teach or suggest the invention of claim 19. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims Depending from Claim 19 Are Patentable

Because claims 24-43 and 45 depend directly or indirectly from claim 19 and incorporate all the limitations of claim 19, the above argument obviates the basis for this ground of rejection. Thus, claims 24-43 and 45 are not anticipated by Branton. Reconsideration and withdrawal of the rejection is respectfully requested.

§ 103(a) Rejections

Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branton in view of U.S. Patent 6,218,663 ("Nisch"). Applicants respectfully disagree.

Claims 22 and 23 Have Been Cancelled

As noted above, claims 22-23 have been cancelled, thereby rendering the rejection of those claims moot. Thus, withdrawal of those rejections is respectfully requested.

Claim 19 Is Not Made Obvious by Branton in View of Nisch

Claim 19, as explained above, is directed to a method that includes, in part, "drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are performed during a single presentation to an instrument."

In contrast, Branton, as explained above, fails to teach or suggest the invention of claim 19. Instead, Branton discloses an aperture-forming process that requires two steps with two presentations to different instruments. The first step in the Branton process is a cavity-forming step that is performed with a lithographic instrument. *See* Branton, col. 13, ll. 5-18. The second step is a thinning step that is performed by any of several processes except lithography. *Id.* at col. 13, ll. 38-40. Thus, Branton fails to teach or suggest drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are performed during a single presentation to an instrument.

Nisch fails to remedy the deficiencies of Branton. As noted in the Office Action, Nisch teaches ion etching for local thinning of a sample. *See* Nisch, Abstract. Thus, Nisch merely teaches one method of performing the second step – the thinning step – in Branton. In fact, Branton teaches that the thinning step can be performed by various ion beam methods. *See* Branton, col. 14, ll. 14-16. Such a combination of Branton and Nisch thus results in an aperture-

forming method that requires two steps with two presentations to different instruments. Nothing in Branton or Nisch teaches or suggests modifying Branton's two-step process such that it is performed during a single presentation to an instrument. Thus, neither Branton nor Nisch, alone or in combination, teach or suggest drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are performed during a single presentation to an instrument.

In fact, Branton teaches away from a single-step process of aperture formation. In Branton, the benefits of the first step - the cavity forming step - are discussed at length. That is, Branton teaches that the cavity forming step can be used to achieve "a desired cavity geometry." See Branton, col. 13, l. 32. Further, Branton states that "[p]referably, given the characteristics of a selected cavity etch process, the cavity pattern extent is correspondingly selected to produce a desired extent at the cavity bottom, and to produce a range of cavity expanses between the cavity bottom and the membrane surface." Thus, the cavity forming step is a vital part of the Branton invention. As such, Branton teaches away from drilling a nano-scale channel through a self supporting portion of the thin film and measuring the channel, wherein the drilling and measuring are performed during a single presentation to an instrument.

Thus, neither Branton nor Nisch, alone or in combination, teach or suggest the invention of claim 19. Further, Branton teaches away from the combination with Nisch. Thus, claim 19 is not made obvious by Branton in view of Nisch.

Claims 20 and 21 Are Not Made Obvious by Branton in View of Nisch

Because claims 20 and 21 depend directly or indirectly from claim 19 and incorporate all the limitations of claim 19, the above arguments obviate the basis for this ground of rejection. Thus, claims 20 and 212 are not made obvious by Branton in view of Nisch. Reconsideration and withdrawal of the rejection is respectfully requested.


Conclusion

This application now stands in allowable form and reconsideration and allowance is respectfully requested.

Respectfully submitted,

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